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BROWN ROT OF APRICOTS

By W. L. HOWARD and W. T. HORNE

DECIDUOUS FRUIT STATION, MOUNTAIN VIEW, SANTA CLARA COUNTY
Offices, laboratory and garage partially concealed by the large pepper tree at the side of the residence. Established January 1, 1920.

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†In co-operation with office of Public Roads and Rural Engineering, U. S. Department of Agriculture.

BROWN ROT OF APRICOTS

By W. L. HOWARD and WM. T. HORNE[1]

Brown rot is a fungus disease affecting apricots and various other stone fruit trees.[2] It attacks both the ripening fruit and the twigs; but since the attack on the ripening fruit is serious, it is to this attack that reference is made when speaking of the brown rot. In California, however, the attack on the twigs has attracted more attention. In this the withering flowers become infected and not only the blossoms and young fruits are killed but also the twigs to a distance of several inches. Atmospheric moisture favors the growth of the fungus, which forms spores in gray pustules of about the size of a pin head on rotting fruit and on blighted flowers and twigs. In California it is practically confined to the regions exposed to ocean influences and does not develop except in times of unusually moist weather.

On the basis of numerous experiments and observations as to the best way of treating this disease, the University of California has recommended a thorough cleaning out of all blighted twigs and rotted fruits of the preceding year, to be followed by a spray program consisting of two applications of winter strength lime-sulphur solution in quick succession just before blossoming and a third spray of summer strength lime-sulphur solution while the calyxes or jackets are still on the fruit.

As this program seemed unduly burdensome, a new set of experiments was commenced by the University at the Deciduous Fruit Station at Mountain View, Santa Clara County. These experiments give hope of a simpler control method, and it seems advisable to make a progress report of the work.

The experiments were started in February, 1920. Sixteen different spray treatments were tried, and the results for the one season were so pronounced as to justify the conclusion that apricot blossoms may be effectively protected from brown rot by spraying the trees

[1] The work described in this bulletin was planned by the authors jointly, but was carried out by the senior author and this statement of the results was prepared by him. The plates were arranged by the junior author.

[2] The fungus causing this disease is now generally known as *Sclerotinia cinerea* (Bon.) Wor., but is found in older works in this country under the names *Scl. fructigena* (Pers.) Schroet. and *Monilia fructigena* Pers.

once, shortly before they come into bloom, with either lime-sulphur or Bordeaux mixture. The lime-sulphur should be used at the rate of 1 gallon to 9 gallons of water, and the Bordeaux mixture at a strength of 4–5–50 (4 pounds bluestone, 5 pounds fresh stone lime, 50 gallons water). Apparently the so-called dry lime-sulphur, used at the rate of 12 pounds to 50 gallons of water, is quite as effective as either of the other two sprays mentioned.

The period of effective spraying is short. In the experiment, the best results followed spraying when the buds were considerably swollen. However, the protection against the disease was excellent when spraying was done at the time the trees were coming into bloom. Apparently there is no injury to the flowers if the spraying is done after they are fully open. The experiments showed conclusively that spraying after the trees have begun to go out of bloom is too late to be of much value. The disease apparently attacks the flowers after they are fully open. Spraying after the blooming period therefore is too late, as infection has already taken place. As with treatments for most diseases, spraying against the brown rot is a preventive rather than a cure.

No evidence has been secured to show that spraying apricot trees before the buds begin to swell affords any protection against the disease. It may be assumed therefore that early winter spraying against the brown rot is useless.

Normally, apricot trees in the Santa Clara Valley come into bloom in from seven to ten days after the buds are swollen sufficiently to show the white lines where the bud scales have expanded to accommodate the growth. In regions near the ocean, such as the Pajaro Valley, in Santa Cruz County, and the Aromas district, in Monterey County, the blooming season may be very irregular. During the season of 1920 many orchards had a blooming period lasting from two to four weeks. Under such circumstances, when the first flowers begin to open on any given tree, a majority of the buds will probably show little or no signs of growth. The best recommendation that can be made for meeting these conditions is to commence the spraying when the first considerable number of flowers are opening. While a spray at this time might not afford the fullest protection to the latest buds, it would undoubtedly protect a great majority in their different stages of development. To delay the spraying until the most forward flowers have passed out of bloom simply invites infection, while spraying as the forward ones are coming out of bloom completely protects those that are fully open, and, in greater or less degree, also protects those that are not yet open.

Fig. 1.—Severe case of brown rot twig blight on apricot tree showing many dead twigs and shoots. Photographed by Miss E. H. Phillips, April 23, 1917.

THE SPRAYING EXPERIMENTS

Since the brown rot does its chief harm by attacking the apricot trees when in bloom, killing not only the blossoms but the entire fruit spurs as well, a spraying experiment was planned to find what materials would protect the flowers from infection, and at what time or times they should be applied. Experiments carried on in previous years by the Division of Plant Pathology of the University of California indicated that lime-sulphur might be a good fungicide for the purpose if three sprayings were given, beginning when the buds were swelling and ending as the trees were going out of bloom. Taking this information as a starting point in the experiment beginning in February, 1920, the trees were sprayed at three stages of development, namely: when the buds were swelling, when the buds were opening, and when the flowers were falling. The test included the following materials: lime-sulphur, Bordeaux mixture, crude oil emulsion, distillate emulsion, dry lime-sulphur, dry sulphur (as a dust spray), and lime whitewash.

The lime-sulphur was used at the standard winter strength of 1 gallon to 9 gallons of water when used as a dormant spray,[3] and 1 gallon to 29 gallons of water when used as a summer spray. In one test the lime-sulphur was used at half strength. The Bordeaux mixture was used at a strength of 4–5–50 (4 pounds copper sulphate, 5 pounds fresh lump lime, 50 gallons water) and also at a strength of 1½–2½–50, both being dormant sprays. Crude oil emulsion was used at the rate of 15–100 (15 gallons of the emulsion and water to make 100 gallons); this was a dormant spray. The distillate emulsion was used at a strength of 15–200 (15 gallons of the emulsion and water to make 200 gallons). The dry lime-sulphur was used at the rate of 12 pounds to 50 gallons of water as a dormant spray, and 2½ pounds to 50 gallons as a summer spray. The lime whitewash was made by the following formula: lime 10 pounds, sulphur 2 pounds, salt ½ pound, the salt and sulphur being stirred in while the lime was slaking. Water was added until the proper consistency for spraying was attained. The dry sulphur was a brand known as "ventilated" sulphur, which is perhaps the best grade for dusting purposes.

The applications given during the first two stages (when buds were swelling, and when buds were opening) were regarded as dor-

[3] Spray applied as first blossoms were opening was classed as a dormant spray, since spray of winter strength caused no injury at this stage, i.e., before the leaves were out.

mant sprays and the materials were used at winter strength. At the third stage (when flowers were falling) the trees were looked upon as being in a growing condition, as the leaf buds were then about to open, so the sprays were diluted to summer strength.

In addition to the single sprayings given at the three stages mentioned, certain rows were sprayed three times, that is, at all three of the different stages. When three sprayings were given, the first two, as before stated, were at winter strength and the third at summer strength.

All the apricots in the spraying experiment were of the Blenheim variety. The trees were about twenty years old, of fair vigor considering the short rainfall of the winters of 1919 and 1920, and had been bearing average crops. They did not show much indication of having suffered seriously from the brown rot in previous years.

Almost up to the day when the first spraying was done, the weather had been too dry to favor the growth of the disease. When first sprayed, the buds had been showing signs of growth for several days; they were swollen so that the white streaks caused by the slipping of the bud scales were very noticeable. The rains began as the spraying started, and continued intermittently until several days after the last applications were made. The work was done with a barrel sprayer and a common Bordeaux nozzle. The pressure perhaps did not average much above 75 pounds, although at times it ran as high as 125 pounds. All parts of the trees were covered, from three to three and one-half gallons of material per tree being used. The results of the spraying are shown in the tables which follow:

TABLE I

TREES SPRAYED AS BUDS WERE SWELLING

	Spray treatment	Spraying date	Average no. diseased twigs per tree	Efficiency of treatment, per cent
Row 3	Lime-sulphur 1–10	Feb. 17	6	92.3
Row 4	Bordeaux mixture 4–5–50	Feb. 17	6	92.3
Row 9	Crude oil emulsion 15–100	Feb. 21	15	80.7
Row 10	Bordeaux mixture 1½–2½–50	Feb. 21	9	88.4
Row 16	Distillate emulsion 15–200	Feb. 23	94	—20.0
Row 1	Unsprayed row		78	

TABLE II

TREES SPRAYED AS BUDS WERE OPENING

	Spray treatment	Spraying date	Average no. diseased twigs per tree	Efficiency of treatment, per cent
Row 5	Lime-sulphur 1–10	Feb. 28	7	90.4
Row 7	Bordeaux mixture 4–5–50	Feb. 28	9	87.6
Row 12	Dry lime-sulphur 12–50	Feb. 28	8	89.0
Row 15	Unsprayed row		73	

TABLE III

TREES SPRAYED AS FLOWERS WERE FALLING

	Spray treatment	Spraying date	Average no. diseased twigs per tree	Efficiency of treatment, per cent
Row 6	Lime-sulphur 1–30	March 10	39	55.6
Row 13	Bordeaux mixture 1½–2½–50	March 10	60	31.8
Row 14	Sulphur dust	March 2 and March 10	47	53.4
Row 18	Lime whitewash	March 17	128	—45.4
Row 19	Unsprayed row*		88	

* This row was later (May 25) sprayed with self-boiled lime-sulphur. This was long after the brown rot had ceased to be active, so that, for statistical purposes, this may be regarded as an unsprayed row.

TABLE IV

SPRAYED THREE TIMES: AS BUDS WERE SWELLING, AS BUDS WERE OPENING, AS FLOWERS WERE FALLING

	Spray treatment	Spraying date	Average no. diseased twigs per tree	Efficiency of treatment, per cent
Row 2	Lime-sulphur 1–10; 1–10; 1–30	Feb. 17, Feb. 28, March 10	4	94.7
Row 8	Lime-sulphur 1–10; 1–10; 1–30*	Feb. 17, Feb. 28, March 10	7	93.7
Row 17	Lime-sulphur 1–20; 1–20; 1–60	Feb. 17, Feb. 28, March 10	12	84.2
Row 11	Dry lime-sulphur 12–50; 12–50; 2½–50	Feb. 21, Feb. 28, March 10	13	82.8
Row 20	Unsprayed row		76	

* Two different rows, widely separated in the orchard, were given the same lime-sulphur treatment.

The figures show very clearly that the disease can be held in reasonable check by spraying, and that lime-sulphur and Bordeaux mixture at winter strength, when applied at the right time, are about equally effective. Each gave above 90 per cent control when used as a single spray. The figures also indicate that spraying as the trees are passing out of bloom is apparently too late and does very little good. It is true that the summer strength of lime-sulphur gave 55 per cent protection, but to be really efficient a spray should reduce disease infection by 75 per cent to 95 per cent. The figures do not show much difference in the effects of the spraying when buds were swelling and when buds were opening. This is fortunate, as most growers will be forced to begin their spraying four or five days before

the buds begin to open in order to be able to finish by the time the trees are coming into bloom. Also there is always danger of delay caused by mishaps to equipment and by rain and wet ground.

The crude oil emulsion mentioned under Table I was included, not because it was thought to be a fungicide, but in order to see if it would cause any spray injury when buds were much swollen. There was not a trace of spray injury, but this might be due to the fact that the spraying was done in rainy weather. There were several days of very cold, rainy, and cloudy weather about this time. Injury from oil sprays, which is now very rare, is believed to occur only when buds are quite dormant or very dry. There is seldom any injury when buds are beginning to be active. The surprise of this test was that the row sprayed with the oil emulsion showed very little brown rot. Although this material cannot yet be recommended as a brown rot spray, it is hoped that those who can will try it experimentally in a small way. If it should prove to be reliable for controlling the brown rot, it would indeed be a valuable spray, as it would at the same time rid the trees of the brown apricot scale, which at present must be sprayed against separately every two or three years.

It is very apparent that the distillate emulsion is of no value as a spray against brown rot, and the lime whitewash spray appeared to be worse than useless. All the sprays under Table III, however, were applied too late to do much good; but even so, the whitewash made the poorest showing of all in that group. It is unfortunate that no trees were dusted with the "ventilated" sulphur in either of the first two stages of the buds.

The so-called dry lime-sulphur made a good showing wherever it was tried, and apparently it is as reliable as either the common lime-sulphur or Bordeaux mixture for controlling the brown rot.

Table IV, taken by itself, would seem to indicate that three sprayings are very satisfactory for controlling the brown rot, but from Tables I, II, and III it is plain that one spraying, after the buds are well swollen and before the trees blossom, is entirely sufficient. It was this first or second spraying, then, or the combination of first, second, and possibly third, and not the third spraying alone that did the work. This is indeed fortunate, as growers who tried to spray their trees three times found such a program impracticable on account of the short period allowed for the work and the inevitable delays due to the weather.

OTHER RESULTS FROM SPRAYING

All the trees in the experiment, both sprayed and unsprayed, had a full bloom and set a heavy crop of fruit. When the fruit was thinned, beginning April 19, it was noticed that trees sprayed with winter strength lime-sulphur or dry lime-sulphur were practically free from attack by the peach twig borer (*Anarsia lineatella*), while those sprayed with Bordeaux and other materials or not sprayed at all were seriously infested. This insect is already present in many of

Fig. 2.—Three Royal Anne cherries inoculated with the brown rot fungus from blighted apricot twigs. The two fruits below were punctured with a sterile needle at the same time. Inoculated June 30. Photographed July 7, by Miss E. H. Phillips.

the orchards that are badly infected by brown rot, and a lime-sulphur spray of dormant strength shortly before the trees come into bloom is the only reliable treatment known for holding it in check. It is fortunate that this same spray will also control the brown rot. If the peach worm or twig borer has not yet appeared in an orchard where brown rot is present, Bordeaux mixture is a reliable spray against the brown rot alone.

DO SULPHUR SPRAYS CAUSE INJURY TO APRICOTS?

There is a tradition in some apricot sections, and especially in the Santa Clara Valley, that lime-sulphur sprays may injure the fruit by causing it to be under-sized or late in ripening. In the spraying

Fig. 3.—Blighted twigs of apricot, April 7, 1917. Gum shows near the lower end of the twigs. This is usually near the end of the killed area. Spore pustules usually show on twigs and dead flowers at this stage but are not clearly shown in this picture. When the twig is cut into it is found brown and dead.

experiment described above, there was not a trace of injury observed from any of the sprays except the self-boiled lime-sulphur, which, at present, is not recommended for apricots at any time. Even where trees were sprayed three times with the commercial lime-sulphur, the

harvesting records showed no differences in time of ripening or in fruit sizes that were traceable to the spray treatments. Fortunately, the three spray program with the lime-sulphur was carried out in duplicate, the two rows being widely separated in the experiment plot. One of these rows had small fruit, but it was very apparent that this was due to the fact that the trees were subnormal in point of vigor. The other row receiving the same treatment consisted of normal trees, and the fruit at harvest time was found to be normal in every respect.

One row (see footnote, Table III) was sprayed on May 25, after the fruit was nearly grown, with an 8–8–50 solution of self-boiled lime-sulphur. This material had a very marked effect on the fruit. Practically every apricot that was at least half covered with the spray ceased to develop. It was very apparent that this spray, which is in universal use for controlling brown rot in peaches in the eastern and southern states, cannot safely be used on apricots after the fruit has set.

YIELD AND GRADES OF SPRAYED APRICOTS

All the fruit in the experiment orchard ran small in size, owing to the inadequate supply of soil moisture early in the season. At the close of the winter rains the ground was wet down only about thirty inches. The orchard was irrigated May 15, the earliest date at which it was possible to procure water, and again June 15, but apparently the trees needed water early in order to make the proper growth and put size on the fruit. The experiment apricots were harvested in three pickings, that is, on July 12, 18, and 24. The fruit from each tree under the different treatments was separately weighed and graded at each picking. Only two grades were recognized, that which was acceptable to the cannery and that which was not. The cannery would accept no fruit smaller than fourteen to the pound; all fruit under this size had to be dried. For convenience these two grades are designated as No. 1 and No. 2. The results of the grading are summarized in Table V.

TABLE V

AVERAGE YIELD PER TREE AND PERCENTAGE OF FRUIT OF CANNERY GRADE AND BELOW CANNERY GRADE PRODUCED UNDER THE DIFFERENT SPRAY TREATMENTS

Row	Spray treatment	Av. yield per tree, lbs.	Percentage No. 1 fruit	Percentage No. 2 fruit
1	Unsprayed*	95.5	93.80	6.20
2	Three lime-sulphur sprays	50.5	3.33	96.67
3	Lime-sulphur once; as buds were swelling	46.0	22.82	77.18
4	Bordeaux once; as buds were swelling	51.16	65.94	34.06
5	Lime-sulphur once; as buds were opening	63.00	71.58	28.42
6	Lime-sulphur once; as flowers were falling	83.16	88.78	11.22
7	Bordeaux once; as buds were opening	104.83	51.51	48.49
7a	Unsprayed†	102.72	76.86	23.13
8	Three lime-sulphur sprays	79.00	70.68	29.32
9	Ortho crude oil once; as buds were much swollen	103.00	84.96	15.04
10	Weak Bordeaux once; as buds were swelling	78.00	78.64	21.36
11	Three dry lime-sulphur sprays	92.5	26.53	73.47
12	Dry lime-sulphur once; as buds were opening	57.00	30.11	69.89
13	Weak Bordeaux once; as flowers were falling	89.83	43.42	56.58
14	Sulphur dust twice; as flowers were falling	176.13	72.25	27.75
15	Unsprayed	115.23	80.27	19.73
16	Distillate emulsion once; as buds were swelling	125.50	90.29	9.71
17	Three weak lime-sulphur sprays	77.83	22.92	77.08
18	Lime whitewash once; as flowers were falling	153.83	79.64	20.36
19	One application self-boiled lime-sulphur, May 25	70.33	23.22	76.78
20	Unsprayed*	73.5	92.31	7.69

* Outside row.

† This row was made up of the end tree of all sprayed rows.

From the yield records shown in Table V it might be inferred that spraying does not protect the fruit sufficiently to increase the yield. This was true in the experiment under discussion, as the brown

rot was not bad enough in this orchard to affect the yield materially. Even though numerous flower clusters were destroyed and many fruiting spurs killed, the set of fruit on the healthy wood that remained was sufficient to make a full crop. Unfortunately, many of the trees were weak from inadequate irrigation in previous years and from a shortage in soil moisture in April and early May of this

Fig. 4.—Apricot mummy remaining on the tree and producing fresh spore pustules the following spring. Pustules are seen with especial clearness near the stem. The spores are very small and a great number are formed on a single pustule and carried away by the wind. May 5, 1915.

season, so that the fruit did not size properly. Also it was realized too late that many of the trees, particularly the weaker ones, were not thinned heavily enough.

Owing to the light attack of the brown rot in the experiment orchard, the yield records must be studied not with a view to determining whether the disease itself reduced the yield—for we know it did not—but to determine whether the sprays caused the fruit to

be undersized or late in ripening. The fact has been well established (Tables I and II) that spraying will reduce the disease by more than 90 per cent, and there is every reason to believe that this rate of control will hold just as true when the disease infection is heavy as when it is light.

Row I, unsprayed, was an outside row, and consequently contained better than average trees, yet there was considerable variation

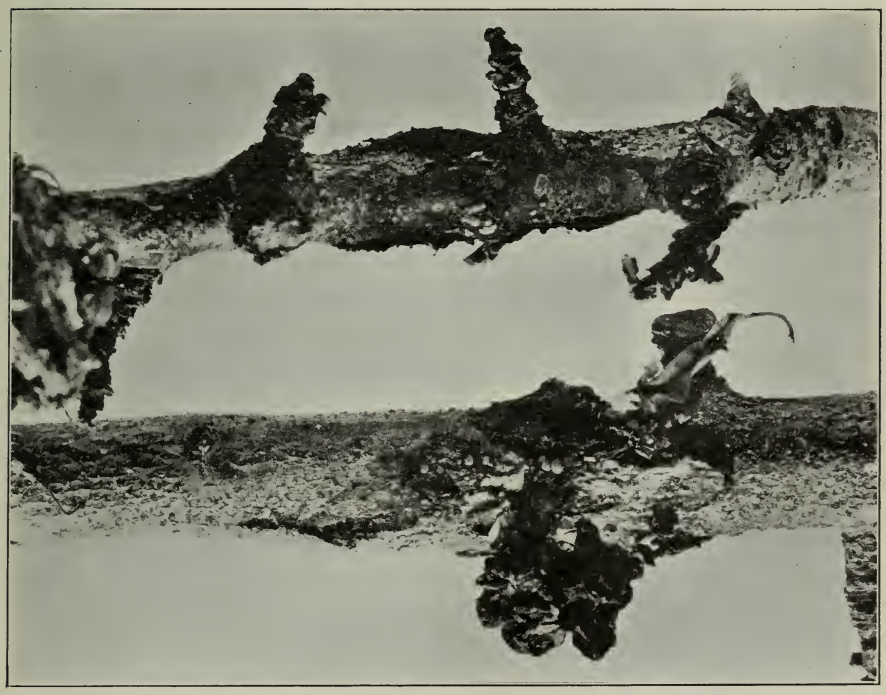

Fig. 5.—Brown rot cankers in almond branches from twig blight the previous spring. Pustules of new spores are forming on the old cankers. A mass of gum shows on the lower twig. April, 1920.

in size and vigor, and the yield per tree varied from 40 to 149 pounds. Still, there was enough extra good fruit on the best trees to bring the yield of No. 1 apricots to 93.8 per cent, the highest of any row in the experiment. Incidentally, one of the trees in this row—the best one —ripened its fruit among the latest in the orchard.

Row 2, sprayed three times with lime-sulphur, contained some very poor trees. They were somewhat undersized and appeared to have made but little growth in the past two years. They not only averaged smaller than those in Row 1, but were not so vigorous. This

was one of the rows that was not thinned enough. As a result, all the fruit was small. Row 2, however, was among the first in the orchard to be harvested. The fruit matured early because the trees were weak.

Row 8 was also sprayed three times with lime-sulphur, but the trees were normal in size and vigor and they ripened their fruit along with other trees of comparable size and condition. This row was about equal in every way to Row 7, which was sprayed with Bordeaux. While the yield of Row 8 was not so great as that of Row 7, the percentage of No. 1 fruit was much higher—70.6 as compared with 51.5.

There has been no question of injury to the fruit from Bordeaux mixture. Taking rows 4 and 7, both Bordeaux sprayed, it is seen that they show a decidedly lower percentage of No. 1 fruit than rows 5 and 6, sprayed with lime-sulphur. Rows 2 and 3 are excluded from the comparisons on account of too many weak trees. Observation of the sprayed trees certainly showed no indication of injury from either the lime-sulphur or the Bordeaux mixture.

EXPERIENCE OF GROWERS

Numerous growers in the Santa Clara Valley have sprayed apricots with lime-sulphur against brown rot. The experience of one of these, Joe Seitz, located two miles northwest of Mountain View near the State highway, is the most instructive. Mr. Seitz has sprayed his ten-acre orchard for four successive years as follows: in 1917, just before the trees came into bloom, with lime-sulphur 1–10; in 1918 the same; in 1919 with lime-sulphur 1–30 just after the bloom; and in 1920 twice before the bloom with 1–10 and once after with 1–30. He reports having always controlled the disease within reasonable limits, without causing injury to the fruit. He will continue to spray hereafter, but thinks that one application of lime-sulphur 1–10, before the bloom, is sufficient. An apricot orchard immediately adjoining that of Mr. Seitz has never been sprayed against brown rot, and has suffered very severely from the disease every year.

Contrasted with the above is the case of D. C. Bache, of Hamilton Avenue, near Campbell, who reports having sprayed his apricots in the spring of 1920 as follows: One part of the orchard received lime-sulphur 1–12 and another part 1–14 as buds were much swollen but not showing pink, and again received the same solutions as trees were passing out of bloom. Still another part of the orchard was sprayed once with lime-sulphur 1–20, and a final part with 1–30, both as trees were passing out of bloom. He considers that all these sprays

were very effective in controlling the brown rot, but thinks that all caused the fruit to be small and late in ripening, and that spraying before the bloom was more harmful than after the bloom. This orchard was examined, and the fruit certainly was small and late in ripening. From the appearance of the trees and the treatment they had received this season, the trouble could not be attributed to lack of moisture in the soil; but the history of the orchard for the past two seasons could not be obtained, as Mr. Bache had just purchased the ranch. Hereafter Mr. Bache will spray with Bordeaux mixture, as he does not consider the peach twig borer, which causes wormy apricots in so many orchards, a serious problem.

Several other orchards have been noted by Mr. Bache as having small fruit this season. He attributed the cause to spraying with lime-sulphur, but on examination the trouble seemed clearly to have been caused by lack of moisture in the soil. In some instances the trouble seemed to date back to the treatment received during the previous season or during the past two years.

CUTTING OUT DISEASED TWIGS

Blighted twigs and mummied fruits that remain on the trees through the fall and winter give rise, in the spring, to a new crop of brown rot spores. These spores on twigs and mummies are the principal known sources of brown rot. Accordingly, some time before the buds swell, all mummies and all affected twigs should be cut out and burned.

It would have been impractical to remove all affected twigs when the disease first broke out or while it was still active, owing to the difficulty or impossibility of telling where the diseased wood left off and the healthy wood began. If the diseased wood is not all removed, the labor of cutting out the twigs may be lost, or, on the other hand, unnecessary damage to the tree may result from heavy pruning to make certain all affected parts are removed.

An experiment in cutting out the diseased twigs soon after the appearance of the disease was tried on the John Losse ranch in Santa Clara Valley. The trees were large and in a fine state of vigor. The tops were rather dense, but fruit spurs were numerous throughout. The attack of brown rot was severe, most of the twigs being affected. On March 24, after the disease had apparently ceased to be active, every affected twig on two trees was cut out. The injured area, however, extends farther along the interior of the twig than on the outside. Hence, although great care was taken—even to making

two or three cuts—observations made ten days later showed that the disease had continued to develop in from 40 to 50 per cent of the twigs. A second cutting was necessary to rid the tree of all affected twigs, and even this was not completely successful.

The object of removing the diseased twigs so early in the season was to determine whether such treatment would protect the ripe fruit from being attacked by the rot. Observations made at harvest time, however, showed as much rot in the trees where the twigs had been removed as where they had not. It appears therefore that fruit rot cannot be prevented by cutting out the diseased twigs, but twig blight, it is believed, can be as effectively and more easily controlled by removing them in the fall or winter as by cutting them out in the spring.

It is believed to be worth while to remove all affected twigs when the regular pruning is done, in order to prevent the disease from being carried over the winter. At the same time every mummied fruit should be collected from the trees and from the ground, and both twigs and mummies destroyed by burning.

Confusion with Peach Blight.—During the past year there has been some confusion between brown rot and the diseases caused by the peach blight fungus, *Coryneum beyerinckii.* The peach blight fungus is active during the wet weather of winter and spring. On apricots it causes winter killing of buds or bud blight, shot-hole disease on the early leaves, and small corky spots on young green fruit. Peach blight fungus causes serious losses in the interior valleys and foothills but is rarely serious in the coast districts, whereas brown rot is confined almost entirely to the coast regions. Treatment for peach blight fungus on peaches and apricots consists in spraying with winter strength lime-sulphur solution or Bordeaux mixture in November or early December and again as the buds swell in the spring. Some growers have been giving the spray in November to apricots in the coast districts, but this is evidently unnecessary in nearly all cases near the coast.

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